

time frame for analysis. It should be noted, that specific projects make assumptions regarding availability of services (i.e. onsite disposal of LLW). This analysis is not intended to detract from the validity of these assumptions but to demonstrate overall programmatic actions and their impacts are independent of the timing element.

Decontamination and Decommissioning – These projects are completed on a case-by-case basis. Impacts from each project are not subject to a time dependency. There are no impacts for extending the time frame for the programmatic analysis beyond 2005.

Environmental Restoration – These projects are aimed at remediating and monitoring past environmental impacts. As a result, environmental impacts are going to be positive in the long-term. Hence, the existing analysis is bounding from a time perspective.

High-Level Waste – This program is currently considering changes to the programmatic activities through the HLW & FD EIS. The time frame for this analysis is through 2095.

Infrastructure – The impacts from existing Infrastructure are fairly constant over time. Any major changes in the program will require additional analysis. Current proposed actions are consistent with those already analyzed.

Spent Nuclear Fuel – The Spent Nuclear Fuel program has been analyzed through 2035.

Waste Management – The current foreseeable future for the waste management program does not include any major changes from current analyzed projects. Any changes would require additional analysis.

While the 1995 EIS used a cutoff date of 2005 for the analysis, this review has determined that the 1995 EIS provides a bounding analysis for most projects beyond 2005. This issue should be reexamined when the next Supplement Analysis is conducted to ensure the continued validity of this determination. Any changes in programmatic actions will require additional analysis to determine whether the proposed changes are within or outside of the scope of the 1995 EIS.

8.0 ENVIRONMENTAL DISCIPLINE CHANGE ANALYSIS

8.1 Introduction to the Environmental Discipline Change Analysis

A major focus of the Supplement Analysis is the change analysis for the different environmental disciplines addressed by the 1995 EIS. The change analysis is a disciplined approach to determining what has changed over the last five years in each of the disciplines. These changes were then evaluated to determine whether the environmental discipline changes have resulted in environmental impacts different than previously reported or whether those changes are expected to produce impacts different than previously reported.

As opposed to the program change analysis where individual projects were found not to be covered by the 1995 EIS, the 1995 EIS covered each environmental discipline by evaluating potential environmental impacts of activities on the INEEL. The exception is the new field of long-term stewardship which is included in this analysis. This change analysis was done to determine whether the specific disciplines had experienced changes in models, assumptions, or data that would warrant additional analysis.

8.2 Methodology

The first step in this analysis is a review of the scope of each environmental discipline as covered by the 1995 EIS. The second is a review of the specific changes that have taken place in that environmental discipline. Areas of change may have included review methodology, assumptions, analytical methods, data adequacy, accident scenarios, accident probabilities, monitoring data, measurements, cumulative impacts, changes in the regulatory environment, and other NEPA analyses that have been completed. The third step is a summary of the major changes and an evaluation of whether additional analysis is required.

Existing analytical data was used where it was available. No new data collection activities were undertaken as a part of this project. The recommendations for additional analysis are based on the professional judgement of the subject matter expert. Each environmental discipline evaluation was subjected to review by the team of subject matter experts, program representatives, NEPA analysts, and project personnel to ensure that each evaluation is thorough and consistent not only between environmental disciplines but also with the program change analysis.

Appendix 8-2 contains the procedure for conducting the environmental discipline evaluations.

8.3 Interaction Between the Program Change Analysis and the Environmental Discipline Change Analysis

As described in Section 6, a tool was developed to compare the programmatic changes with the environmental discipline changes. The first draft of the environmental change evaluations were done independent of this tool. This allowed an independent first draft to be formulated based on the subject matter experts' knowledge of their respective disciplines. Appendix 6-3 was then used as a validation tool for the details of the analysis.

8.4 Results of the Environmental Discipline Change Analysis

A summary of the results of the individual environmental discipline change analysis is given below. The specific environmental discipline change analysis documents are given in Appendix 8-1.

8.4.1 Adverse Environmental Effects Which Cannot Be Avoided. Of the projects analyzed in the 1995 EIS, some are no longer operating and of the planned projects some have not occurred. In general, adverse environmental effects that cannot be avoided are less than projected in the 1995 EIS. However, additional analysis is still required for both cultural resources and ecology to understand these impacts through completion of the Wildland Fire EA.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

8.4.2 Aesthetic and Scenic Resources. A qualitative analysis was performed to determine if there were any changes affecting aesthetic and scenic resources. Changes in the land status around the INEEL and construction and demolition activities since 1995 were reviewed to determine changes to the visual quality of the INEEL. There are no air quality or visibility issues that are changing the character of the landscape.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.3 Air Resources. The maximum emissions from radiological sources are bounded by the analysis in the 1995 EIS. For air pollutants, the maximum emission scenario for cumulative emissions from baseline and preferred alternative sources remains bounding for most pollutants, as there are fewer sources operating today. There are four pollutants that exceeded the baseline established in the 1995 EIS. A review of the health effects of these pollutants show that they are well below established emissions standards. Because it can be readily shown that there are no adverse health effects associated with these pollutants, additional analysis is not required for these pollutants.

The existing analysis does not show any adverse impacts from air emissions at 50 km. It is not anticipated that there will be any adverse impacts from air emissions at 200 km. However, due to stakeholder concerns, analysis in the HLW & FD EIS has been completed out to 200 km for some sectors. The methodology has changed such that now regional impacts can be considered using new models. Limited use of new models (CALPUFF in a screening mode) in the HLW & FD EIS and the CPP-606 Prevention of Significant Deterioration permit provide some mitigative influence on the changes in the discipline. Additional analyses using the latest emissions data and a full compliment of meteorological data are warranted to address stakeholder concerns and to assist DOE in identifying the need for and location of additional regional monitors.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline. Additional analysis is recommended to address stakeholder concerns regarding air quality beyond 50 km.

8.4.4 Cultural Resources. Impacts to cultural resources resulting from actions analyzed in the 1995 EIS have been less than expected because there have been fewer acres of land disturbed. However, the 1995 EIS did not anticipate or address the effects of wildfires on cultural resources. Impacts related to wildfires are addressed in the Idaho HLW & FD EIS and are being addressed in more detail in the Wildland Fire Environmental Assessment.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline. The Wildland Fire EA being prepared will address the outstanding cultural impacts. No analysis beyond that being performed by the Wildland Fire EA is required.

8.4.5 Cumulative Impacts and Impacts from Connected or Similar Actions. There has been a net reduction in risk potential and contributing additive sources and therefore a reduction in cumulative environmental impact risks from INEEL operations since the 1995 EIS was issued. The 1995 EIS adequately discloses and bounds operational cumulative impacts from all sources except for cumulative risk from flooding which may need to be updated based on a final flood plain determination. Long-term groundwater cumulative impacts from all sources are still under development.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

8.4.6 Ecology. The actions and alternatives analyzed in the 1995 EIS that have been implemented have had little or no impact on ecological resources. Also, it is expected that those actions and alternatives analyzed in the EIS, that are yet to be implemented, would have minimal impact on site ecology. The impacts of fire, fire suppression, and threat of permanent habitat conversion caused by non-native invasive plant species are the main sources of ecological impacts on the INEEL. No additional analysis with regard to planned DOE actions is required. The Wildland Fire EA under preparation is required to understand impacts on the Sagebrush Steppe ecosystem on the INEEL of fire, pre-fire suppression, vegetation management, and restoration actions.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline. The Wildland Fire EA being prepared will address the outstanding ecological impacts. No analysis beyond that being performed by the Wildland Fire EA is required.

8.4.7 Environmental Justice. A qualitative analysis was performed to determine if there were any changes in the environmental justice discipline. The analysis reviewed the current INEEL activities and compared those to activities analyzed in the 1995 EIS. The methodology used in the 1995 EIS analysis is consistent with the Council on Environmental Quality guidance issued in 1997. That guidance is still in effect and DOE-HQ has not issued any final guidance that has changed requirements or imposes additional requirements. The major assumption of having Argonne National Laboratory-West as the epicenter for the region of impact is reasonable and still valid for a site-wide analysis. The conditions, data, and methodology used for analysis in the 1995 EIS are still valid and consistent with the requirements to evaluate and mitigate, if necessary, disproportional high and adverse impacts to minority and low-income populations.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.8 Facility Accidents. The existing analysis is technically adequate. However, each of the five major NEPA analyses (1995 EIS, HLW & FD EIS, AMWTP EIS, Nuclear Infrastructure PEIS, S-B SNF EIS) of this discipline used slightly different input assumptions, models, and codes and as a result arrives at what could appear to be contradictory results. It is difficult to compare impacts across the site because the analysis results are reported in different formats, different receptor locations, and different units. Standardized facility accident analyses utilizing a common set of assumptions, input parameters, codes, and formats would greatly assist the public and DOE management to compare the bounding impacts for facility accidents across the entire site. The existing analysis has not been shown to be inadequate but the results are reported in ways that are inconsistent.

The 1995 EIS showed bounding accident impacts from a Hot Fuel Examination Facility fuel handling accident of 5.0 rem to the maximally exposed offsite individual (MEI) and an ANL-W chlorine release with a MEI exposure of 35% of the Emergency Response Planning Guidelines (ERPG)-3 guidelines. This compares to the HLW & FD EIS bounding accidents of a seismically induced failure of degraded bin sets up to 9500 years into the future resulting in 83 rem to the

MEI and a spill of 15,000 pounds per minute of liquid ammonia which would result in greater than ERPG-2 concentrations at 3600 meters. These new impacts (HLW & FD EIS) now present the bounding impacts for INEEL operations. These changes do not warrant additional accident analysis.

Because of revised accident analysis, the environmental impacts described in the 1995 EIS are not bounding for the INEEL, but the bounding impacts are described in the HLW & FD EIS. Additional analysis for this discipline is not required.

8.4.9 Geology. There are no major environmental impacts related to the 1995 EIS geology characterization. Subsequent revisions, finalizations and challenges to volcanic and seismic hazards characterization documents and their conclusions indicate that the initial assessments of these hazards in the 1995 EIS are robust and bounding analyses.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.10 Health And Safety. The INEEL conditions, data, and methodology used in the 1995 EIS remain valid with the exception of the four air pollutants discussed below. The type and scope of work performed at the INEEL has not changed significantly during the period 1995 – 2000. Changes in the safety programs at the INEEL have improved operational safety in many respects. Adoption of the Radiation Protection, Quality Assurance, and Nuclear Safety Regulations has improved the overall conduct of operations and safety at the INEEL. Implementation of the Integrated Safety Management System (ISMS) at the INEEL ensures that operations performed at the INEEL have safety and health requirements integrated with all INEEL work activities.

While emissions of hazardous air pollutants were greater than estimated for four pollutants, the resulting maximum concentrations for those pollutants are still below any regulatory threshold requiring additional controls. As a result there are no adverse health impacts to the public from these pollutants.

The analysis for the RWMC shows no adverse health impacts to the public from buried wastes. However, a cumulative analysis of all of the sources of radioactive wastes left in the ground at the INEEL over the long term needs to be performed (in accordance with DOE O 435.1) in order to fully understand the potential ground water related health impacts to the public.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

8.4.11 INEEL Services. In almost every category, the usage rate for these resources has gone down. Where they have not, the increase has been more than offset by the identified decreases in resource usage.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.12 Irreversible And Irretrievable Commitments Of Resources. Of the projects analyzed in the 1995 EIS some are no longer operating and, of the planned projects, some have not been

implemented. As a result irreversible and irretrievable commitments of resources have in general been less than projected in the 1995 EIS.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.13 Land Use. A number of changes in activities at the INEEL were noted, however they do not differ substantially from planned uses. There have been changes in land management policies and practices but this has not changed the overall land use.

The 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.14 Mitigation. The Mitigation analysis is adequate for the scope of activities identified in the 1995 EIS. The addition of other actions to this scope will require additional review to ensure Mitigation actions are not required.

The 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.15 Noise. The primary source of noise from INEEL operations is from transportation. There have been a number of decreases in transportation activities in the last five years including total number of INEEL workers, decrease in the number of bus routes, elimination of helicopters, and use of a four day work week. The net result has been a reduction in noise levels.

The 1995 EIS provides a bounding analysis for the environmental impacts of noise. Additional analysis for this discipline is not required.

8.4.16 Regulatory Framework for Environmental Restoration and Waste Management.

The regulatory analysis performed for the 1995 EIS was acceptable for the time in which it was performed. However, the approach taken was simply a recitation of the most applicable regulations and a general statement of the intent of the regulation. The analysis that needs to be completed is to provide a complete list of all applicable regulations with analysis of how those regulations impact human health and the environment. In every case reviewed, changes in regulations between 1995 and 2000 were to make the regulations more restrictive, thus reducing environmental impacts. The HLW & FD EIS provides a good analysis of most regulations applicable to the INEEL and provides the appropriate level of analysis. The 1995 EIS does not provide a bounding analysis for the regulatory environment, however, the HLW & FD EIS provides the majority of the required analysis. Because the regulatory changes have resulted in reduced environmental impacts, no further analysis is required.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.17 Relationship Between Short-Term Use of the Environment and the Maintenance and Enhancement of Long Term Productivity. Of the projects analyzed in the 1995 EIS some are no longer operating and of the planned projects some have not occurred. The section on cumulative impacts and Impacts from Connected or Similar Actions provides a summary of the operational changes that have occurred since 1995. As a result short-term impacts have in general been less than projected in the 1995 EIS. In addition, the long-term impacts associated

with land disturbances have also been less. The potential long-term risk to workers, the public and the environment remains extremely low even though this risk may be long-term. The impacts resulting from wildfires on the INEEL since 1995 were not anticipated in the 1995 EIS. However, again no long-term loss of productivity within the ecological environment on the INEEL is anticipated. Wildfires often times result in a long-term increase in productivity within ecological environments. The wildfire impacts to facility operations on the INEEL resulted in no long-term changes.

This SA acknowledges that several flood studies have been conducted on the INEEL but that there is a degree of uncertainty associated with flooding and overland flow. There is also a difference of opinion between the United States Geological Survey and the Bureau of Reclamation that is fully described in the HLW & FD EIS. Again, although the potential exists for short-term impacts, the existing studies show minimal potential impact on long-term productivity.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.18 Socioeconomics. The 1995 EIS Alternative B projected minimal socioeconomic impacts beyond 1995 since employment levels would be nearly the same as they were in 1995 (8,620 in 1995 and 8,316 Alternative B projected for the year 2000).

The document titled "INEEL Impacts 2000" published by the Department of Energy, Idaho Operations Office, shows total INEEL employment in 2000 was 8,155 people. A comparative analysis between the 3 sets of employment numbers to the current socioeconomic conditions and the continued growth seen in the region of influence and lack of any known direct adverse socioeconomic impacts, supports the 1995 EIS conclusions that minimal socioeconomic impacts have resulted from implementation of the Alternative B decision.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.19 Traffic and Transportation. For purpose of comparison, the number of shipments (1,255) and vehicles miles traveled (9,813,196) related to the INEEL, during the past five years are well within the bounded number of shipments (17,145) and miles (16,157,200) analyzed in the 1995 EIS.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.20 Water Resources.

Ground Water: The 1995 EIS addressed existing groundwater plumes from the TRA, INTEC, TAN, and RWMC. It also provided estimates of ground water doses from the ongoing low-level waste disposal activities at the RWMC. The 1995 EIS showed a dose of 0.60 mrem/yr attributable to the LLW disposal facility through the year 2060. It also stated that results of the preliminary risk assessment for buried wastes indicate that contaminants would not reach the INEEL site boundary exceeding Federal primary drinking water standards through 2005. Additional analysis completed since the 1995 EIS confirms that these statements are still valid. The projected groundwater dose from all buried waste at the RWMC is 0.07 mrem/yr through 2120.

The 1995 EIS stated that additional work was required in order to understand ground water impacts from INEEL operations. Since that time, additional analysis has been completed that addresses some of the unknowns but additional work is still required. The RWMC Composite Analysis (CA) has been completed since the 1995 EIS was published along with updates to the RWMC Performance Assessment. These have addressed one of the major groundwater analysis needs: further definition on the balance of the buried waste at the RWMC. The WAG 3 RI/FS has also been completed since the 1995 EIS and provides another major piece of the groundwater analysis such as impacts from spills at the INTEC. (It should be noted during the discussion of groundwater impacts, that there is a great deal of uncertainty in groundwater modeling and impacts. Most models calculate results conservatively because they cannot duplicate actual transport mechanisms through the vadose zone. These transport processes are highly complex especially in an environment like the INEEL where fractured basalt, rift zones, geothermal activity, and sedimentary interbeds all play a part in fate and transport of contaminants. Analysis done to date has consistently used conservative assumptions in performing this analysis.)

Decontamination and decommissioning (D & D) decisions on ultimate disposition of radiologically contaminated facilities have the potential to add significant source term that may increase the long-term dose reflected in the Composite Analysis. From a site-wide cumulative impacts standpoint, the D & D impacts on the long-term ground water dose are uncertain. D & D decisions must take into account cumulative impacts on groundwater dose estimates. The additional analysis that is needed is a site-wide Composite Analysis in accordance with DOE O 435.1. This information will be used to address some of these uncertainties.

While additional work is required beyond 2005 and for D&D decisions, the conclusions of the 1995 EIS (see page 5.8-4 in the 1995 EIS) are adequate to support the ROD. Actual ground water monitoring data shows decreasing contaminants across the INEEL with the exception of inorganic salts (from agricultural sources in the Mud Lake area) and carbon tetrachloride, which is being addressed through CERCLA remediation actions.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

Surface Water: Flood hazard characterization in the 1995 EIS was limited to the Mackay dam failure scenario, which is considered to be a bounding accident. Structural failures were assumed to be insignificant due to the shallow depth and low flow velocity at the INEEL approximately 45 miles downstream of Mackay reservoir. Because the effects of the Mackay dam failure scenario were assumed to be small, the effects of the 100 and 500-year floods were not significant on projects analyzed in the 1995 EIS.

Additional flood risk analysis will be required. The flood risk must be assessed consistent with flood hazard analysis prescribed in DOE standards. Specifically the 100-year and 500-year flood plains must be refined for the INEEL. DOE-ID will refine the Flood Plain documentation per 10 CFR 1022. The review determined that the flood plain analysis in 1995 was adequate for safe operation of INEEL facilities.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

8.5 Conclusions

In making the determination that additional analysis is required, the baseline (Alternative B) against which this analysis was completed must be considered. Since Alternative D was the maximum impact case, it is important to understand whether the additional analysis was unanalyzed (not in the 1995 EIS) or not a part of the ROD (a part of one of the other alternatives but not a part of Alternative B.) In this case, the additional analysis that is required is not included in any of the other alternatives in the 1995 EIS. Hence the additional analysis identified above is required.

9.0 SUMMARY

9.1 Program Change Analysis Summary

This section summarizes the results of the Program Change Analysis.

Decontamination and Decommissioning (D&D)

The D&D program has not accomplished all of the D&D activities previously projected because of reduced funding availability. The buildings that have undergone the D&D process have not had environmental impacts greater than those analyzed. The only impact not completely analyzed is the affect on site groundwater of future D&D decisions to leave radiological contamination in place vs. disposal in a LLW disposal facility. D & D decisions made since the 1995 EIS and which left radioactive source term in the ground received additional NEPA analysis. Further analysis may be required to ensure future D&D decisions are integrated with a sitewide groundwater analysis to understand the impacts of project specific decisions.

Environmental Restoration (ER)

With CERCLA actions, the environmental impacts are analyzed during the CERCLA process, including a public involvement process. The NEPA values that are not routinely addressed through CERCLA are addressed in the 1995 EIS. The changes that have taken place in the ER program over the last five years have resulted in reduced environmental impacts.

All impacts described in the 1995 EIS are bounding from a NEPA perspective. The purpose of this supplement analysis was not to analyze the adequacy of the CERCLA decisions but to ensure that a multidisciplinary review of proposed sitewide actions was conducted.

High-Level Waste

The high-level waste program is considering significant changes. As a result, an EIS has been prepared to analyze these proposed changes. The EIS describes environmental impacts that are beyond those impacts described in the 1995 EIS. No further NEPA analysis is required for this program because those HLW related impacts beyond those described in the 1995 EIS are addressed in the HLW & FD EIS.

Infrastructure

Projects in the 1995 EIS not specifically included in the ER, WM, HLW, or SNF sections are addressed in this analysis. The 1995 EIS covers the infrastructure projects listed and describes